

Haskins (E. B.)

THE  
SUBJECTIVE AND OBJECTIVE INFLUENCES  
OF  
M E D I C I N E.

An Address

INTRODUCTORY TO  
THE REGULAR COURSE AT SHELBY MEDICAL COLLEGE,  
NASHVILLE, FOR THE SESSION OF 1859-60.

BY E. B. HASKINS, M.D.,  
PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE.

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PUBLISHED AT THE REQUEST OF THE CLASS.

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Box

Nashville, Tenn.:  
PRINTED BY A. A. STITT.  
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## Correspondence.

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SHELBY MEDICAL COLLEGE, NASHVILLE, TENN.,  
Nov. 3, 1859.

PROF. HASKINS:

DEAR SIR:—We, the undersigned, a Committee on behalf of the Students of Shelby Medical College, solicit for publication your Address delivered on 31st ult., before the Class, at the opening of the present Course.

We feel satisfied that the topics discussed, in language so chaste and arguments so vigorous, will be as pleasant and profitable to the reader as they were to the hearer. We hope, therefore, it will be agreeable to you to comply with our request.

We are respectfully yours, etc.,

GEO. R. SULLIVAN,  
J. M. PLUNKETT,  
T. S. GENTRY,

F. G. DE ROCHE,  
J. M. PEEVEY,  
W. T. J. SULLIVAN.

J. S. ANDREWS, *Chairman of Committee.*

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NASHVILLE, TENN., Nov. 4, 1859.

GENTLEMEN:

Your polite and flattering communication of the 3d inst. is received, and I cheerfully comply with your request.

Most respectfully yours, etc.,

E. B. HASKINS.

MESSRS. J. S. ANDREWS,  
GEO. R. SULLIVAN,  
J. M. PLUNKETT,  
T. S. GENTRY,  
F. G. DE ROCHE,  
J. M. PEEVEY,  
W. T. J. SULLIVAN.





THE  
SUBJECTIVE AND OBJECTIVE INFLUENCES  
OF  
MEDICINE.

AN ADDRESS INTRODUCTORY TO THE REGULAR COURSE AT SHELBY  
MEDICAL COLLEGE, NASHVILLE, FOR THE SESSION OF 1859-60.

BY E. B. HASKINS, M.D.,

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE.

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GENTLEMEN:—The importance of every profession or occupation depends upon the number and value of certain influences which flow from its cultivation and practice. These influences may not inappropriately be termed *subjective* and *objective*—the former relating to those who cultivate and practice the occupation, whilst the latter has reference to society, or those for whom the occupation is exercised.

In order, then, to stimulate you to a patient and zealous prosecution of the course of studies you are about to commence, I propose discharging my duty on the present occasion by an effort to show you that the profession which you have selected for your vocation in life unites in itself the most salutary of those two great classes of influences: that whilst it renders the most valuable services to the world, it gives those varied and

healthful exercises to the intellectual and moral faculties that tend to the development and perfection of human nature ; and hence it is a profession worthy of your highest ambition, and one for whose welfare society should feel the deepest interest. The subject of my remarks, therefore, will be THE SUBJECTIVE AND OBJECTIVE INFLUENCES OF MEDICINE.

I will first solicit your attention, then, to a contemplation of those influences which the study and practice of our profession exercises upon its own members—in other words, the *subjective* influences of medicine.

The science of our profession, a knowledge of which forms the educational basis for the practice of its art, is as boundless in extent as it is diversified in character. Commencing with the human organism, it embraces all that relates to its structure and its functions—the laws that govern and the phenomena that attend its vital actions under the influences of health, of disease, and of medicinal agents. It also embraces whatever is known of the organisms of all animated beings which can by comparison of structure, or of function, in any way elucidate human anatomy, physiology, and pathology. It embraces, moreover, all that is known of such things as have proximately or remotely any vital relationship with the constitution of man : it embraces the facts in relation to the chemical, physical, and dynamic properties of the air he breathes—its various sources of contamination, and causes of variation in temperature, humidity, and density ; it embraces all that is known of the physical, chemical, and dynamic properties of the water he drinks, and the food he eats—their relative dietetic proportions, the proper manner of their admixture, and the best methods of their culinary preparation.

It embraces not only the knowledge of those substances of healthy or alimentary properties, but also such substances, animal, vegetable, and mineral, as are endowed with toxical and medicinal properties—in other words, poisons and medicines—the proper means of counteracting the effects of the former, and regulating the influences of the latter. It embraces, also, whatever relates to the geographical distribution of endemic diseases and their causes, and the rise and progress of epidemics, as the plague, small-pox, cholera, influenza, etc. ; and hence considerable acquaintance with geography and topography is necessarily acquired.

From this rapid and imperfect survey of the scientific subjects which enter into a medical education, you perceive that the leading principles and most salient facts of almost every branch of natural science are brought into active requisition. But it is not only a knowledge of the facts and principles of the sciences that is acquired in the attainment of a liberal medical education ; so intimately is the *history* of medicine blended with



civil history, as well as the history of the rise and progress of general philosophy, that to become learned in the former, you are obliged to know something of the latter. Moreover, a more extensive and critical acquaintance with ancient and modern languages is acquired in the faithful prosecution of medical studies. To learn and retain in memory the technical names and terms found in medical science, to say nothing of the habitual perusal of the ancient authors, must keep the mind familiar with a vast number of Greek and Latin words that would otherwise be forgotten or not acquired; and as a large portion of the most valuable modern medical literature is annually published in foreign languages, particularly the French and German, to keep pace with the progress of our science and art, requires so constant a resort to these languages as to render them in a manner as familiar as our own. Indeed, having once acquired any facility in their use, the medical student finds it to be no task to improve and perfect his acquaintance with them.

So certainly true is this assertion, that it may with safety be affirmed that (with the exception of certain amateurs and cultivators of the sciences and fine arts) our best French and German scholars are to be found in the medical profession; and the reason of it is quite obvious—there is no other class of readers who find the daily reading of those languages compatible with the prosecution of their legitimate pursuits.

So much, then, for the *subjective* influence of medicine, in so much as it relates to the impartation of knowledge to the understanding of its members. I trust, however, that this array of subjects will not appall you—that you will not see in it a task too herculean to be accomplished. Not all that is here alluded to is embraced in your present elementary studies. Proficiency in medicine is the work of a lifetime, and the mind gradually expands with the information attained, and acquires additional vigor with the increasing exercise of thought, so that every new study is accomplished with more ease than that which preceded it. The beneficial influences of medical studies and practice upon the mental constitution do not stop at merely enriching the mind with knowledge; but in the acquisition of that knowledge, and in its application to practice, the intellectual powers are exercised and developed in the highest degree.

Of course I do not undertake to prove to you so simple and obvious a proposition as that which only alleges that the mind is cultivated in the study of medical science; this is true of every profession and literary pursuit: my object is to show you that, in the study and practice of medicine, so great a variety of subjects is contemplated, and so varied are the means used in the investigation of the human organism, its dis-

eases and their remedies, that all of the faculties of the mind are brought into daily exercise, and therefore the highest and most general development given to the mental constitution. Take first the organs of special sense, through whose avenues the mind receives its ideas of things, and upon the perfection of which it depends for its truthful conceptions, and what other profession or occupation gives them such constant and healthful exercise? In the study of the animal tissues and juices in health and in disease—their differential properties, as they affect the organs of sight, of smell, of touch, and of taste—these organs are continually brought into associated exercise of function; and in the habitual practice of percussion and auscultation the ear is trained to the most delicate variations of sound in quality, pitch, and intensity.

But these sensations do not enter and remain in the mind as mere passive perceptions; they are compared, associated, judged of, and interpreted; and hence the reasoning and reflective faculties are improved commensurately with those of special sense. And besides this, as observation and experiment form the groundwork of modern medical doctrines, and the mind being habitually trained to ignore the authority of empty speculation, and to recognize the claims of facts as the only data for deduction, the reasoning faculties are thoroughly schooled in the methods of inductive philosophy, whilst those of the imagination and fancy are chastened and subdued. But these advantages will only be experienced by those of you who continue to prosecute your studies after you have left the college halls. The comparatively short course of study embraced in the few years of your pupilage only lays the foundation for a more extensive knowledge, and trains the mind in that mode of study and thought which, continued in after years, brings the mind to a vigorous and healthy maturity.

I come now, young gentlemen, to consider another class of influences exercised by the profession of medicine upon its members—a class perhaps not so captivating to young ambitious minds, but the intrinsic value of which is far greater to yourselves, and no less useful to society—I allude to the influences exercised upon the moral constitution. As all of our moral obligations flow from a state of mutual dependence, the first and most important requisite to a proper discharge of our obligations to one another, and to society generally, is to know and properly appreciate that mutual dependence; and what is more calculated to bring about such a result than the scenes daily witnessed by the physician in the discharge of his professional duties? Where can any one so properly go to learn human weakness and dependence as to the house of affliction, where the strong man who but yesterday was revelling in the pride and buoyancy

of glowing health, to-day is prostrate, without the mental capacity to know his proper wants, or the physical strength to obtain them. Scenes like this not only teach us our mutual dependence, but awaken a lively sympathy, the habitual exercise of which tends to that sound cultivation of the moral feelings that secures the most rational, prompt, and efficient aid. I know it is constantly alleged that the physician is so familiarized with human suffering as to become blunted in his feelings of sympathy—in vulgar parlance, that he is hard-hearted. This is a mistake, and betrays ignorance of the laws that govern human actions. The self-composure of those addicted to attendance on human suffering is the result of a *cultivated* moral feeling—a moral feeling *strengthened* as well as enlivened. On witnessing the wants of our fellow-creatures, the true measure of sympathy that should be experienced is just that *which will excite to the promptest and most efficient aid, and no more*. All beyond this is a waste of human happiness, and produces that distraction of mind that ends in grief rather than in succor. The habitual attendance on the sick, and the daily contemplation of diseases, and their causes, the best methods of curing the former, and of removing and avoiding the latter, (and in a large number of cases without the probability of reward or reciprocal favor,) constitute the best possible mental and moral training to enlarge and intensify the feeling of charity and general benevolence. And again, the relationships of the physician, both to his fellow-practitioners and to society, are of so extensive, complicated, and delicate a nature, in order to a strict performance of the obligations incurred, that he is obliged to make frequent reference to certain principles of morals growing out of those relationships.

These principles of morals constituting medical ethics are not, as many suppose, arbitrary laws enacted by a medical legislature, but they are principles and laws deduced from the nature of things—from certain special relationships—just as the principles of general moral science are deduced from general relationships. In short, they constitute moral science in a restricted sense, and are of special application. I repeat, then, that medical ethics is not a code of enacted laws, but a system of deduced laws, the truth and authority of which have been by various medical bodies recognized.

This system of moral science forms a part of the professional education of every physician, and it is expected that he will make it the rule of his conduct in professional intercourse. And now, may we not go farther, and conclude that he who labors to find out and discharge one class of moral obligations, will more certainly imbibe those notions, and cultivate those feelings of justice and general morals, that will qualify him to dis-



charge with more enlightened fidelity the obligations growing out of all of the relations of life?

There is yet another, and not the least important, influence of the medical profession over its own members: it is that which is exercised upon the social feelings, and results in the improvement of the manners or social conduct. It is not enough that one should have a cultivated mind, and possess proper moral feelings and sentiments, but he should be endowed with the art of giving expression to such feelings and sentiments in *actions* as well as words. In other words, a delicate regard for the rights and feelings of others cannot be declared in so convincing a manner as by those impromptu actions continually called forth in social communion. A man may be ever so learned, and his moral sentiments ever so pure—if his manners are rude and unsightly, he can never be an agreeable companion or an acceptable member of cultivated society; for, however willing we may be to apologize for inadvertence, such after-considerations come in too late to avert the pain occasioned by an offence against good taste.

But social intercourse is too accidental, and conduct arising out of it too spontaneous, to allow manners to be governed by reflection and previous determination; they must spring from an impress made upon the social feelings by long cultivation. Hence the necessity of that early training which results in what is termed, in common parlance, good-breeding; hence, too, the propriety of that distinction between a gentleman and a well-bred gentleman. Some persons, it is true, seem endowed by nature with that sense of propriety that requires but little cultivation to make them all that is desired in a social point of view; but such individuals form exceptions to the general rule. As good manners, then, is the result of cultivation, and that cultivation is found in repeated contact with polite society, need I undertake to show you how it is that the practice of the medical art tends to promote the end of social cultivation? Need I point out to you that element found always in the field of the practitioner's labors, that so surely contributes to purify the feelings and soften the manners? Certainly I need not remind you that his duties carry him daily into the presence of the opposite sex, whose innate virtue, and keen sensibility to whatever is rude, constitute them the truest critics of sentiment and manners; and although modesty closes the lips against words of reproof, offended taste records, on the blushing cheek, lessons of impressive instruction.

Having told you—briefly and imperfectly, I own—what medicine does for its own members, I will now endeavor to show you what it does for society; in other words, we will now take a standpoint that contem-

plates the objective influences of medicine. And although in contemplating medicine in this point of view, it may not present an aspect so flattering to your vanity or so stimulating to your ambition, what is far better, it will present an aspect more pleasing to your philanthropy, and more stimulative of a public spirit.

I take it for granted—1st. That medicine cures some diseases, i. e., that there are diseases which get well under medical treatment, that would prove fatal if left without such treatment; 2d. That medicine shortens the duration of such diseases as would recover without the aid of medicine; 3d. That medicine lengthens out the lifetime of subjects whose diseases are necessarily mortal; and 4th. That medicine mitigates the suffering, and renders the subject more tolerant of all diseases.

I say, I will not undertake to prove these several propositions. It would be a waste of time to argue questions before an audience, the truth of which is presumed to be already acknowledged.

And first, then, with regard to the influence of medicine in the *cure of diseases*. Now this simple proposition, unaccompanied by any estimate of the probable number cured or saved from death, conveys to the mind no adequate conception of the immense value rendered to society by the power of medical treatment over the rate of mortality. But by resorting to a simple calculation, the subject becomes embodied in a tangible form. According to statistical tables, prepared in this country and in Europe, it is found that about two\* per cent., on an average, of the whole population of a country die annually; and this, too, under all of the appliances of the medicine of the present time. As the population of the United States numbers now about twenty-five millions, (it is more, as it was 23,191,876 in 1850,) this would give an average annual mortality in the United States of half a million of persons. We now assume that if there were no such thing as medical treatment, the annual mortality would be two and a quarter per cent., instead of two per cent. This, I grant, is all assumption, since we have no means of arriving at the number saved from death; but certainly no one who allows medicine to possess any influence over the rate of mortality at all, would deny the right of this low estimate. This being allowed, then, a difference of sixty-two thousand is the result; i. e., by the exercise of the medical art, the estimate shows that there are saved from death every year in the United States sixty-two thousand persons, a number equal to twice the population of the city of Nashville; and in ten years there is saved an aggre-

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\* Two per cent. is assumed for the sake of simplicity of calculation; it may be, for this country, a little above or below this figure.



gate of six hundred and twenty thousand. These figures speak more eloquently the praise of medicine than could language of the most extravagant eulogy; and therefore nothing more need be said on this point. But it is allowed that medicine does more than lessen the annual mortality from disease; it is allowed that it shortens the duration of disease; i. e., such diseases as would recover without medical treatment, are rendered shorter in duration by the agency of the medical art. 'Let us, then, pursue a like mode of calculation to enable us in some degree to appreciate the value of this influence, which is hardly recognized or thought of by society.

It has been ascertained from statistical tables, that for every death, there are, on an average, about thirty cases of sickness, averaging three weeks in duration.\* As the annual deaths of the United States have been estimated at five hundred thousand, this, then, would give a total number of cases of sickness of three weeks' duration annually in the United States of fifteen millions. Subtracting from this number the two and a quarter per cent. upon the whole population, which it is assumed would die without medical aid, and we have the hypothetical number of cases as a remainder that would recover annually without the aid of medicine, viz., fourteen million four hundred and thirty-seven thousand five hundred.

It is next assumed, that by the aid of medical treatment the duration of those cases is shortened, on an average, four days each. This assumption will not be considered too favorable to medical treatment, when you are reminded that Louis found from experiment that pneumonia was made to recover three or four days earlier by practicing blood-letting in the first two or three days of that disease, than when practiced later. If, then, four days of health be gained to each case of sickness, we obtain an aggregate of one hundred and thirty thousand eight hundred and twenty-one years of human health annually; or what would be equal to one year of healthful enjoyment for one hundred and thirty thousand eight hundred and twenty-one persons—or a lifetime of seventy years of uninterrupted health for one thousand eight hundred and sixty-nine persons. And now, when it is remembered that this estimate is made only for the space of a single year, and only on the population of the United States, which is but a fraction of the population of the civilized world—I say, when these facts are considered, may we not rightfully conclude, that if medicine had no other influence over disease than that

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\* Dr. Playfair and others make twenty-eight the number of cases to each death, but I adopt Dr. Simonds' estimate of thirty. See Fenner's Reports, 1850.

of shortening its duration as here assumed, this alone would compensate for all of the energy displayed, and time and money expended, in the cultivation and practice of the medical art?

But again. By the art of medicine it is allowed that with those who die—those whose diseases are incurable in the nature of things—death is postponed, and existence thereby prolonged. And I will assume three days as the average length of life gained for each case of fatal disease.

This estimate must be too low; for there are many chronic diseases lengthened out as many months, and even years, by a proper medicinal and regiminal system of treatment. There are many cases upon record, (and every physician of experience has seen such,) where death, in all probability, has been postponed for months, and sometimes years, by medical treatment. If three days, then, be allowed as the average increase of life to each subject afflicted with mortal disease, we obtain an aggregate of one million and a half of days upon the half million of annual deaths in the United States—or there is gained annually an amount of life equal to one year, for four thousand one hundred and nine persons. I know that it may be objected by some, that such a life is rather a curse than a blessing, but such objections could only be raised by those who are unacquainted with the principles of our common nature, the resources of the medical art, and unappreciative of the important concerns of life that may be transacted in comparatively a brief period of time. With the various resources of medicine of the present day for the relief of suffering, there is scarcely any condition of life so painful that may not be rendered tolerable, and even pleasurable, in comparison with death. He whose duties have often carried him in the presence of those who are about to pass from amongst the living, and has studied the condition of the emotional faculties as displayed upon the features, in actions and in words, cannot but have deduced that, even in this trying hour, when the resources of medicine have been exerted to quiet physical suffering, the pleasurable feelings more than counterbalanced the painful. The face may be seen often wreathed in smiles of pleasing reveries and dreams, and even pleasurable converse is held by the dying with family and friends. But apart from all consideration of the emotional condition of the subject, man often, in the hurry of life after fortune or fame, puts off to the last hour some of the most important duties of life, both in reference to time and eternity; and who, then, can estimate the value, both to the living and the dying, of deeds accomplished in this additional period of human life!

But medicine does more than all this. It adds greatly to the sum total of human happiness by the *alleviation of pain*. The great dread of

disease exhibited by man is not so much on account of the fear of its destruction of life, or the loss of hours of productive labor, as on account of the pain consequent on disease. Every practitioner of experience can testify that the importunities of the sick for the administration of drugs, arise more from the intolerance of some actual pain than from any fear of impending death; and when the fear of fatality is expressed, it is generally based upon the relative severity of existing pain. Indeed, when we come to analyze the proximate causes of human actions, we find that *pain*, in some degree and form, is the great disturber of man's repose, and gives origin to the busy motion of human life. We seek food and drink to assuage the painful sensations of hunger and thirst. The busy tradesman is kept in action by the painful idea of real or fancied poverty; and sleep is driven from the eyes of the midnight student by the painful sense of comparative ignorance. And thus it is with the varied movements of daily life—pain is the disturber of repose, and fruitful action is the opiate that lulls for a time to repose again. But not so with the pain of disease; this pain does not suggest the remedy, as does the healthy pain of active life; it is not a pain that may be trusted to the instincts of our nature, but must be delivered over to the resources of science. Hence man's importunate inquietude under its threatening domination.

It is impossible to represent by figures the good influences exerted by medical art in the alleviation of pain; yet it may be expressed in this way in a manner to give you a better idea of the aggregate good, than can be done by any simple enunciation of the fact. If, then, it be allowed (and I presume no one will deny so reasonable an assumption) that for every case of disease of three weeks' duration, medical treatment converts (if I may use the expression) an average of six hours of wakeful restlessness into as many hours of quiet repose, then, as it has been calculated that there are annually fifteen million of such cases in the United States, the aggregate result will show that there is gained in this way, by medical treatment, an amount of human repose from actual pain, equal to one year for over ten thousand individuals, without bringing into the account the vast number of surgical operations annually performed, which are now rendered painless by anæsthetic agents.

But apart from the physical suffering allayed by appropriate drugs there is a mental disquietude assuaged by the presence of the physician, or even the consciousness of his daily attention and assiduous care. And this influence is not confined to the patient, but extends to all of his surrounding family and friends.

But it is not only the province of medicine to cure such diseases as are

curable, to shorten the duration of those that would recover without medicine, to lengthen out the duration of those that are incurable, and to mitigate the sufferings of all; but it is the province of the medical art to *prevent diseases*. Diseases are prevented, first, by means directed to guard the constitution against particular diseases, or by *prophylactic* means. It must be admitted that not so much has been done in this way as the resources of medicine might lead us to hope for. Unfortunately, mankind is more prone to heed the beckonings of alluring pleasure than the warnings of threatening evil; and often many years of health, and even life, are sacrificed to gain some object of fancied importance. The medical adviser is seldom consulted except for existing disease; and he who ventures gratuitous advice, generally receives as his reward the mortification of neglect.

There is much reason to believe that there are many constitutional diseases of an hereditary character that might by an early and vigorous system of regimen, consisting in the proper regulation of the food in regard to quantity and quality, the regulation of the clothing, exercise, occupation, and social relations, and all other means calculated to invigorate the general health, as well as fortify the constitution against the particular disease with which it is threatened—I say, there is much reason to believe that many such diseases might, by appropriate prophylactic measures, be warded off, and the apparently early doomed be allowed to live out his threescore and ten years. But if medicine has not done all in this direction that it may be in its power to do, yet it has done enough to justify us in claiming the prevention of diseases by prophylactic means as one of the important Objective Influences of Medicine. I will present to your minds two examples of this character, viz., the prophylaxis against small-pox by vaccination, and that against scurvy by lemon-juice and other vegetable matters. I presume you already know that about the close of the last century the vaccine virus was discovered and instituted as a preventive against small-pox, by an English physician, Dr. Edward Jenner; that, although it met with opposition at first, it was not very long in gaining the confidence of the profession and public, whence it soon found its way into every part of the civilized world; and although it has not, as was confidently hoped by its illustrious discoverer, exterminated that loathsome disease, yet it has greatly lessened human mortality, as the statistics of every country fully show.

It is ascertained from tables compiled by a committee of the Epidemiological Society of London, that in that city the average rate of mortality from small-pox, as compared with the mortality from all causes, was, for the last fifty years *anterior* to the introduction of vaccination, ninety-six



to every one thousand, i. e., there were ninety-six deaths from small-pox for every one thousand deaths from all causes; and that for the first fifty years *after* the introduction of vaccination, the average rate was reduced to thirty-five to one thousand; i. e., there were only for this period thirty-five deaths from small-pox for every one thousand deaths from all causes, making a difference in the rate of mortality from small-pox in this period of sixty-one to every one thousand. As the vital statistics of London, then, will show that the average mortality of that city, during the latter period of fifty years, was about thirty thousand annually, it is found, by a simple calculation, that there has been saved from death in the city of London alone, by this prophylactic means, in the first fifty years after its introduction, two thousand one hundred and thirty-five persons annually; and in the whole period, an aggregate of over one hundred thousand persons. But this result gives only a feeble idea of the immense economy of human health and life exerted over the entire world by this single prophylactic means; for it is admitted by English authority "that statistical returns have shown that the proportionate mortality from small-pox in England and Wales is considerably more than double what it is in any of those continental states in which vaccination is more or less stringently enforced." (*Watson.*)

I will now invite your attention to another disease which has been greatly subdued, and indeed rendered almost harmless by a judicious system of prophylaxis. I allude to scurvy. It is well known to you, no doubt, that in former times this disease has destroyed its thousands; that every country supporting a maritime trade has experienced the ravages of scurvy amongst her seamen on long voyages—whole ships' companies having sickened and died within a short space of time; nor has this disease been confined to the sea: prisons, camps, garrisons, and besieged towns, have been theatres of its tragical demonstrations.

But since a prophylaxis has been discovered and widely used—since the introduction of lemon-juice as a preventive, (as well as cure,) together with raw succulent vegetables, and a better system of protecting the body against cold, dampness, and foul air, this disease has almost ceased to give dread or excite alarm. In order to present to your minds the immense service that medicine has rendered to the world by this means, I cannot do better now than quote from Dr. William Budd the following instructive passage: "We have no data for forming an accurate estimate of the mortality occasioned by scurvy before preventive measures were generally adopted. It has been supposed, however, to have destroyed more sailors than the other various accidents incidental to sea-life, together with the terrific consequences of naval warfare; and his-



tory furnishes us with many examples, which tend to show that in this estimate the destructive effects of it have not been overrated. Sir R. Hawkins, who lived in the latter part of the sixteenth century, and whose description of this disease shows that he was well acquainted with it, informs us that he could give an account of ten thousand mariners consumed by scurvy alone, in twenty years that he had been at sea. Admiral Hosier, who set sail in the month of April, 1726, with seven ships of the line, for the West Indies, buried his ships' companies twice, and died himself of a broken heart in consequence.

"We are told by Dr. Lind, that during the war which terminated in 1748, in the peace of Aix-la-Chapelle, scurvy proved more destructive, and cut off a greater number of valuable lives, than the united efforts of the French and Spanish arms.

"But the most striking illustration of the dreadful effects of scurvy in former times, is the contrast, in point of health, which our present navy offers with the fleets of this country before effectual remedies were resorted to. The mortality in the navy had been gradually decreasing since 1780, when various improvements were made in the victualling of the fleet, and in the general treatment of the men; but in 1795, when a regular supply of lemon-juice was first granted, the mortality fell *suddenly*, and to a degree scarcely credible. The effect of all these salutary measures may be estimated by the fact mentioned by Sir J. Barrow, that between the years 1779 and 1813, the diminution of sick and of deaths in the British navy was in the proportion of four to one nearly." (Lib. of Prac. Med., vol. 3, art. Scurvy.)

So much, then, for the prevention of disease by prophylactic measures.

But diseases are also prevented by *hygienic* means, or means for invigorating and fortifying the body against diseases generally. This branch of the medical art is yet, as it were, in its infancy; and although I cannot present so striking examples of its effects in the prevention of disease as has been done of *prophylaxis*, yet the elements of hygienic treatment are so many, and of such wide and constant application, and their adaptation to the end in view so obvious, that it is deemed enough simply to mention them.

Before doing so, however, I wish to remind you of one general advantage of hygienics over prophylactics—it is, that whilst the latter only protect the organism against certain diseases, the former tend to bring the organism to that physiological perfection which secures the fullest enjoyment of physical and mental health.

Under the various circumstances which have a tendency to derange the human organism, as the vicissitudes of weather, epidemic and ende-

mic poisons, fatiguing exercise, loss of sleep, mental depressions, etc., it is found that the badly nourished are the first to sicken and succumb. In order that the body should preserve its own healthy relations amidst the various agents of destruction which surround it, its vital powers must be constantly reinforced by the ingestion of those substances which are destined to enter into the structure of its several parts. Hence the importance of a knowledge of the dynamic relations, both as to quality and quantity, of the substances that enter into the daily food of man. There is no subject which has engaged the scientific mind more ardently, within the last few years, than that of the applied sciences, and not the least so has been that department of organic chemistry and of physiology which contemplates the relationships of the various articles of alimentation to the healthy nutrition of the tissues of the body. So many and so able have been the laborers in this field, that although questions of great interest and importance remain yet to be solved, the scientific world is of one mind with regard to what alimentary principles are necessary and proper to constitute a wholesome and efficient diet, under the influences of climates, seasons, and the varying amount of physical and mental labor. Every enlightened physician of the present day knows, that although the food of man under all circumstances must contain certain definite alimentary principles, as water, oily matter or fats, starch or its equivalent sugar, albumen or its equivalent fibrin, casein, gluten, and certain salts of potash, soda, lime, etc.; yet he also knows that varying circumstances must vary their relative proportions—that the hyperborean, in order to preserve his health and vigor of body, must live on a diet very different in the relative proportions of these principles, from that which the inhabitants of the equatorial regions find it proper to subsist upon; and that the inhabitant of temperate latitudes, whilst enjoying a wider range of dietetic variety, finds it necessary for vigorous health to change the formula of his diet to suit the varying demands upon his organism of summer and winter: I say, these facts are now known to every enlightened physician, and they are rapidly being diffused throughout all cultivated society, and are slowly but steadily working a wonderful influence upon the sanitary condition of the prudent and thoughtful. The Englishman in India, the Frenchman in Algeria, and the American in Panama, would be truly stupid who would at the present day dare indulge in the rich animalized food upon which he healthfully subsists at home. And equally stupid would be the Arctic traveller who would allow a fastidious taste to reject the raw blubber of the walrus and seal, and appease his appetite on sea-biscuit and pickled pork.

Before the true relationship that the waste of an organ bears to its

functional action was understood, the hard-working student could be often recognized by his blanched skin, flaccid muscles, and other evidences of defective nourishment; but now, since physiology teaches that the brain, in mental labor, is subjected to a waste of substance that requires the same nutritious diet for its supply as do the muscles in the performance of bodily labor, the student may no longer deny himself those articles of generous living so loudly called for by his organic wants; and the boarding-school can no longer offer in extenuation of a scanty table, the hackneyed adage that "the mind of the student is beclouded by the use of rich animal food." But it is not only the consideration of healthful admixture of the alimentary principles in the dietary of man that so seriously engages the mind of the hygienist, but the economical distribution of nutritious food amongst all classes of society. In this country, however, where wages are high, and food abundant, this subject is not so absorbing in interest as in some portions of the old world, where the reverse of this is true. In France, for example, it is ascertained that there is not a sufficient amount of animal food produced to furnish for her whole population a healthy invigorating diet; and yet in the city of Paris, where the wealthy and extravagant of all countries congregate, there is consumed, on an average, five times more animal food to each individual than there is in the less opulent country districts.\* But, thanks to enlightened and liberal hygiene, these facts, and the consequences flowing out of them, are widely made known, and measures for their correction have been wisely suggested.

It is also the province of hygiene to investigate, as a cause of disease, the state of the *atmosphere*.

The respiration of man and other animals, combustion, the fermentation and putrefaction of organic substances, are so many agencies that contaminate the air and render it deleterious to health. And as there are many conditions of atmospheric deterioration attendant on civilized life, as factories, mines, theatres, legislative halls, hospitals, ships, etc., it has been for a long time a serious question with hygienists as to the best means of neutralizing and conveying off the bad air, and supplying its equivalent of good air. But the attainment of this end has met with many practical difficulties. In the first place, there are known no means of converting the bad air of crowded apartments into good air; there are means, it is true, of neutralizing certain offensive odors, and perhaps some poisonous effluvia, by what are termed disinfectants, (and this, by the way, is a valuable hygienic measure,) but there are no practical

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\* Des Substances alimentaires, etc. Par A. Payen.

means known of converting air contaminated by respiration, combustion, etc., into good air; in other words, the aqueous vapor and carbonic acid gas generated by respiration and combustion cannot be made to restore back to the air its equivalent of oxygen. Nature out of doors accomplishes this end on a grand scale, by means of vegetable life; but this process cannot be imitated by art. Hygiene, therefore, has been dependent for this end upon the single expedient of *ventilation*.

And here a second difficulty presented itself in the necessity for warmth in apartments in winter, which seemed to oppose the practicability of a free ingress of fresh external air. But this difficulty has been in a great measure overcome in several methods, which ingeniously and economically combine the principles of heating and ventilating into one common system; and these methods are in successful operation in many great establishments where large numbers are congregated in the same apartment. Of course these methods for ventilation are too complicated to admit of description on this occasion; it is enough for our purpose to know, that although perfection has not been attained, yet, a large amount of sickness is annually prevented by the systems of ventilation already in use. There are other measures for preserving and invigorating the health, and thereby protecting the constitution against the causes of disease, such as the regulation of the clothing so as to protect the body against the depressing influences of cold in winter, and the relaxing effects of heat in summer, attention to the relative quantity of exercise and repose, means for securing personal cleanliness, habits of temperance, etc., but want of time will not allow any further notice of them here. These are subjects well understood, and their good effects are felt in all cultivated society.

I will now briefly call your attention to the salutary influences of medicine upon the *public* welfare, or welfare of the State. And it is in this direction that *prophylaxis* and hygiene exert their influences in the most efficient manner. Man is more intent on the acquisition of good than the avoidance of evil; and when left to his own volition, very generally pursues the *phantom* of the former until he merges into the *reality* of the latter. He acts in a different way, however, when placed in power over others. In this case there is an assumption of responsibility that appeals loudly to his pride and sense of justice; and hence it is that under wise and conscientious rule man is often better provided for than when left to govern himself. The truth of these remarks finds illustration in the subject before us. In our armies, our navies, our public hospitals, asylums, penitentiaries, and other public institutions, the various prophylactic and hygienic measures are enforced by law. Physicians of the most approved



qualifications are employed to attend their sick ; dietetic rations combining all those substances necessary to vigorous health in the largest proportions consistent with a reasonable economy, and clothing for the body of proper materials to suit the variations of seasons, are provided ; intemperance is forbidden, and the relative number of hours for labor and rest are fixed upon physiological laws, and their observance enjoined ; moreover, laws for quarantine protection of large cities against infectious epidemics, are enacted and enforced.

Owing, however, to differences in the forms of government, the influences of medicine upon the public welfare are not felt so widely in this country as in Europe. Here the government is the creature of the people, and our legislative acts are but the reflection of the popular will. The government is presumed to have no more interest in the people than the people manifest for themselves ; and the jealousy that every one feels of his personal freedom restrains him from commanding reforms by *law*, which he feels competent to make *without law*. In Europe, however, the theory and practical operations of government are reversed. There the people are the *subjects* of the government, and the rulers have an interest in the ruled apart from the interest they have in themselves. Hence considerations of self-interest, as well as of responsibility, which always exists with the power to govern, enable the enlightened monarchies of the old world to do for the public health what the people of the new world will not do for themselves.

In Europe, therefore, all of those measures calculated to save the lives and protect the health of the people are objects of public attention, and rules flowing out of them are stringently enforced. Medical colleges, hospitals, etc., receive a large share of governmental patronage ; and prizes, pensions, and honors are freely bestowed as encouragements for original discoveries and inventions. Hence, I say, we are not in the best condition to witness the most extensive and salutary results of a public hygiene. But to return more directly to our subject. The influence of medicine upon the public welfare is felt, first, in the *increase of population*.

"The most decisive mark of the prosperity of any country," says Adam Smith, "is the increase of the number of its inhabitants."\* And it may be assumed as a general truth that the aggregate wealth and independence of a nation or State is in direct proportion to the size of its population, so long as the latter does not exceed the capacity of the soil to feed and clothe them. Having, then, already shown you the vast

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\* An Essay into the Nature and Causes of the Wealth of Nations.



number of individuals annually saved from death by the cure of diseases, and by prophylactic and hygienic means, you cannot but perceive the wonderful agency of medicine in increasing, at least indirectly, the population of a country. If time would allow it, I might also show you in the second place, from facts already noticed, the influence of medicine in the promotion of *longevity*; and, in the third place, its influence on the *improvement of the physical and mental vigor of the people*, all of which add to the wealth and power of a State or nation. I might also show, fourthly, the indispensable assistance rendered to institutions for *life assurance* by affording bills of mortality from which are constructed tables of the probable duration of life, at the various periods and under the different circumstances of existence, and by examinations and information rendered with regard to the relative state of soundness of applicants for life assurance. Also, assistance rendered to the *administration of justice in courts of law*, where questions of medical jurisprudence are involved.

These questions all deserve a more lengthy notice, but I can only here allude to them for the want of time.

I cannot conclude, however, without briefly noticing another influence of medicine exercised for the good of the world. It is that exercised in aid of *human civilization*. The first, and perhaps most important, step in civilizing a savage people, is to impress them with the superiority of those whose business it is to enlighten them. The difficulties of intelligent communication, through a scanty language, are such that something must be *done* of an impressive character to open the door to their confidence and respect. And what is so well calculated for this end as the exercise of the healing art? The extraction of a painful tooth, a dose of opium that lulls a racking pain, a dose of quinia that cuts short an attack of ague, or a caustic wash that cures an inflamed eye, are results so striking as to impress at once the conviction of the presence of some superior mind, and the way opened for the introduction of other subjects. And this is in accordance with all experience on this subject. The history of travellers and missionaries goes to show that the medical knowledge they carry with them, imperfect as it may be, is the first agent by which access is gained to the confidence of uncultivated man. The following, from a late foreign medical journal, is in point: "It is asserted that surgery is completely unknown among the Chinese. There is no such thing as an indigenous surgeon to be found in the vast empire of China, (except those who have been educated by foreigners.) There is not a doctor capable of performing the smallest operation. There are no such things as surgical instruments. The treatment of fractures and disloca-

tions is completely unknown ; even a tooth is not taken out unless it becomes so detached that it may be removed by the fingers. Foreign surgeons who operate for cataract, remove tumors, cut for stone, amputate legs, etc., are treated as gods.”\*

Facts of this nature are known to all missionary laborers, and hence they nearly all, before starting out from home, pick up what medical knowledge they can, and provide themselves with such medical agents as will best suit the diseases of the country they are about to visit.

I have now, young gentlemen, brought our subject to a close. I have endeavored in a brief space of time to make you acquainted with a subject embracing many subdivisions of the most absorbing interest, and which merits a far more extended notice than has been found consistent with our object and compatible with our time to give on this occasion. I have carried your attention rapidly over an extensive territory of rich and varied scenery, only pointing out here and there those prominent objects visible in a distant perspective. I have endeavored to sketch the outlines of an entire view, rather than paint the details of a partial one ; and although I am sensible of the imperfect manner in which this has been done, yet my object has been accomplished if I have brought out the influences of the healing art in such visible relief as to inspire you with a more lively admiration of its powers, and stimulate you to a more zealous study of its learning.

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\* London Medical Times and Gazette, from *L'Union Médicale*.





